

WHAT IS CLAIMED IS:

1. An apparatus comprising:

a charge pump to output a first control signal and a second control signal based on a frequency of an oscillating signal and a reference frequency;

5 a switch capacitor circuit to generate a first output capacitance based on the first control signal;

a main loop circuit to generate an output signal based on the second control signal;  
and

10 an oscillating circuit to generate the oscillating signal, the frequency of the oscillating signal based at least on the first output capacitance and the output signal.

2. An apparatus according to Claim 1,

the switch capacitor circuit to exhibit more gain at first frequencies of operation than at second frequencies of operation, the second frequencies being greater than the first  
15 frequencies, and

the main loop circuit to exhibit less gain at the first frequencies of operation than at the second frequencies of operation.

3. An apparatus according to Claim 1, further comprising:

20 a detector to receive a signal having a first frequency, the first frequency based on the frequency of the oscillating signal, to receive a reference signal representing the reference frequency, to determine a difference between the first frequency and the reference frequency, and to transmit a signal to the charge pump based on the difference.

4. An apparatus according to Claim 3, wherein the first frequency is equal to the frequency of the oscillating signal.

5 5. An apparatus according to Claim 3, wherein the first frequency is a factor of the frequency of the oscillating signal.

6. An apparatus comprising:

a first charge pump to output a first control signal based on a frequency of an oscillating signal and a reference frequency;

10 a second charge pump to output a second control signal based on the frequency of an oscillating signal and the reference frequency;

a switch capacitor circuit to generate a first output capacitance based on the first control signal;

15 a main loop circuit to generate an output signal based on the second control signal; and

an oscillating circuit to generate the oscillating signal, the frequency of the oscillating signal based at least on the first output capacitance and the output signal.

7. An apparatus according to Claim 6,

20 the switch capacitor circuit to exhibit more gain at first frequencies of operation than at second frequencies of operation, the second frequencies being greater than the first frequencies, and

the main loop circuit to exhibit less gain at the first frequencies of operation than at the second frequencies of operation.

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8. An apparatus according to Claim 6, further comprising:

a first detector to receive a signal having a first frequency, the first frequency based on the frequency of the oscillating signal, to receive a reference signal representing the reference frequency, to determine a first difference between the first frequency and the reference frequency, and to transmit a first detector signal to the first charge pump based on the first difference; and

a second detector to receive the signal having the first frequency, to receive the reference signal, to determine a second difference between the first frequency and the reference frequency, and to transmit a second detector signal to the second charge pump based on the second difference.

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9. An apparatus according to Claim 8, wherein the first frequency is equal to the frequency of the oscillating signal.

10. An apparatus according to Claim 8, wherein the first frequency is a factor of the frequency of the oscillating signal.

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11. A system comprising:

a transceiver to transmit and receive data comprising:

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a charge pump to output a first control signal and a second control signal based on a frequency of an oscillating signal and a reference frequency;

a switch capacitor circuit to generate a first output capacitance based on the first control signal;

a main loop circuit to generate an output signal based on the second control signal; and

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an oscillating circuit to generate the oscillating signal, the frequency of the oscillating signal based at least on the first output capacitance and the output signal, the oscillating signal to be used to encode and decode the data;

a processor to process the data; and

a double data rate memory in communication with the processor.

12. A system according to Claim 11,

5       the switch capacitor circuit to exhibit more gain at first frequencies of operation than  
at second frequencies of operation, the second frequencies being greater than the first  
frequencies, and

the main loop circuit to exhibit less gain at the first frequencies of operation than at  
the second frequencies of operation.

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13. A system according to Claim 11, further comprising:

a detector to receive a signal having a first frequency, the first frequency based on  
the frequency of the oscillating signal, to receive a reference signal representing the  
reference frequency, to determine a difference between the first frequency and the reference  
15   frequency, and to transmit a signal to the charge pump based on the difference.

14. A system according to Claim 11, further comprising:

a framer coupled to the transceiver and to the processor, the framer to decapsulate  
data received by the transceiver and to encapsulate data to be transmitted by the transceiver.